

CLAIMS

We Claim:

- 5 1. A composition comprising an isolated nucleic acid sequence encoding a polypeptide that binds to Orphanin FQ, wherein said nucleic acid is at least 85% identical to a nucleic acid sequence selected from the group consisting of SEQ ID NOs: 9, 10, 12, 14, 16, 18, 19, 20, and 21.
- 10 2. The composition of claim 1, wherein said nucleic acid is selected from the group consisting of SEQ ID NOs: 9, 10, 12, 14, 16, 18, 19, 20, and 21.
- 15 3. The composition of claim 1, wherein said nucleic acid is at least 90% identical to a nucleic acid sequence selected from the group consisting of SEQ ID NOs: 9, 10, 12, 14, 16, 18, 19, 20, and 21.
- 20 4. The composition of claim 1, wherein said nucleic acid hybridizes under conditions of low stringency to a nucleic acid is selected from the group consisting of SEQ ID NOs: 9, 10, 12, 14, 16, 18, 19, 20, and 21.
- 25 5. A vector comprising the nucleic acid sequence of Claim 1.
6. A host cell comprising the vector of Claim 5.
- 25 7. An animal comprising the host cell of Claim 6.
8. The animal of Claim 7, wherein said animal is a non-human mammal.
- 30 9. The animal of Claim 7, wherein said animal expresses a polypeptide selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23.

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10. The composition of claim 1, wherein said nucleic acid sequence encodes a polypeptide that binds to Orphanin FQ, wherein said polypeptide is at least 95% identical to a polypeptide selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23.

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11. A composition comprising an isolated nucleic acid sequence selected from the group consisting of SEQ ID NOs: 9, 10, 12, 14, 16, 18, 19, 20, and 21.

12. The composition of claim 11, wherein said nucleic acid sequence is SEQ ID
10 NO:9.

13. A composition comprising an isolated polypeptide sequence that binds to Orphanin FQ, wherein said polypeptide is at least 95% identical to a polypeptide selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23.

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14. The composition of claim 13, wherein said polypeptide is selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23.

15. A method for screening test compounds for the ability to alter the level of
20 interaction between Orphanin FQ and OFQR, comprising:

a) providing:

- i) at least one OFQR polypeptide sequence selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23;
- ii) an orphanin FQ peptide;
- iii) one or more test compounds;

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b) combining in any order, said at least one OFQR polypeptide sequence selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23, said orphanin FQ peptide, and said one or more test compounds under conditions such that said OFQR polypeptide sequence, said orphanin FQ peptide, and said test compound can interact;

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- c) detecting the level of interaction between said OFQR polypeptide sequence and said orphanin FQ peptide; and
 - d) comparing the level of interaction of said OFQR polypeptide sequence and said orphanin FQ peptide in the presence of said test compound to the level of interaction in the absence of said test compound.

16. A method for screening test compounds for the ability to bind to OFQR, comprising:

- a) providing:
 - i) at least one polypeptide sequence selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23;
 - ii) one or more test compounds;
- b) combining said at least one polypeptide sequence selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23 and said one or more test compounds under conditions such that said polypeptide sequence and said test compound can interact; and
- c) detecting the presence or absence of binding between said polypeptide sequence and said test compound.

20 17. A method of screening test compounds for their ability to alter OFQR signaling activity, comprising:

- a) providing:
 - i) at least one polypeptide sequence selected from the group consisting of SEQ ID NOs: 11, 13, 15, 17 and 23;
 - ii) a test compound suspected of altering OFQR signaling activity; and
- b) contacting said test compound with said polypeptide; and
- c) comparing the level of signaling activity of said polypeptide in presence of said test compound to the level of signaling in the absence of said test compound.

30 18. The method of claim 17, wherein said polypeptide is expressed in a cell.

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19. The method of claim 17, further providing a reporter gene construct comprising a reporter gene.

5 20. The method of Claim 19, wherein said determining if said compound alter the signaling of said polypeptide comprises detecting expression of said reporter gene.

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